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Dated: March 27, 2006 Signature: (Roger A. Heppermann)

Docket No.: 06005/35628A (59-11206)
(PATENT)

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Patent Application of:
Nixon et al.

Application No.: 09/510,053 Confirmation No.: 7646

Filed: February 22, 2000 Art Unit: 2123

For: Integrating Distributed Process Control System Functionality on a Single Computer

Examiner: Dr. Kandasamy Thangavelu

APPEAL BRIEF IN ACCORDANCE WITH 37 C.F.R. § 41.37

MS Appeal Brief - Patents
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Dear Sir:

INTRODUCTORY COMMENTS

This Appeal Brief is being submitted in accordance with 37 C.F.R. § 41.37 following the Notice of Appeal filed December 22, 2005 in this application and the Notice Panel Decision from Pre-Appeal Brief Review mailed January 27, 2006.

(i) Real Party in Interest

The real party in interest is Fisher-Rosemount Systems, Inc., assignee of the entire right title and interest to this application as evidenced by the assignment document recorded at Reel 010817, Frame 0363 on May 16, 2000, which constitutes the entire chain of title from the inventors to Fisher-Rosemount Systems, Inc.

(ii) Related Appeals and Interferences

There are no related appeals or interferences known to the appellant, the appellant's legal representative, or assignee which may be related to, directly affect or be directly affected by or have a bearing on the Board's decision in the pending appeal.

(iii) Status of Claims

Claims 1-21 are pending and at issue in this case. Each of Claims 1-21 stands rejected for the reasons provided below.

(A) Claims 1, 6-8, 10-12 and 17-18 stand rejected as allegedly unpatentable under 35 U.S.C. § 103(a) over Leibold et al. (U.S. Patent No. 5,818,736) ("Leibold") in view of Brown et al. (U.S. Patent No. 6,377,859) ("Brown I"). Of these, Claims 1 and 12 are independent claims.

(B) Claims 2, 3, 13 and 14 stand rejected as allegedly unpatentable under 35 U.S.C. § 103(a) over Leibold in view of Brown I and further in view of what the Examiner has characterized as "Admitted prior art" ("APA"). Each of these claims is a dependent claim.

(C) Claims 4, 5, 15 and 16 stand rejected as allegedly unpatentable under 35 U.S.C. § 103(a) over Leibold in view of Brown I and further in view of Bowling (PCT WO 97/45778) ("Bowling"). Each of these claims is a dependent claim.

(D) Claim 9 stands rejected as allegedly unpatentable under 35 U.S.C. § 103(a) over Leibold in view of Brown I and APA and further in view of Santoline et al. (PCT WO 97/38362) ("Santoline"). Claim 9 is a dependent claim.

(E) Claims 19-21 stand rejected as allegedly unpatentable under 35 U.S.C. § 103(a) over Leibold in view of Brown I and further in view of Brown et al. (U.S. Patent No. 6,192,281) ("Brown II"). Of these, Claim 19 is an independent claim.

(iv) Status of Amendments

There are no amendments filed subsequent to final rejection.

(v) Summary of Claimed Subject Matter

The subject matter defined by independent claims 1 and 12 is generally directed to a system or a method that simulates, on a single computer, the operation of and communication interactions between various process control components of a distributed process control network in which the various process control components are designed to be stored and executed in different computing or logic devices when actually implemented in a process control environment. More particularly, the subject matter of these claims is directed to a simulation system that uses a single computer to simulate process control modules that are designed to operate together but in multiple different computing devices to implement process control within a process plant. To illustrate the claimed subject matter in an exemplary manner, and without limiting the scope of the claims other than to the language of the claims themselves, the following summary is provided.

As described in Fig. 1, a distributed process control system 10 includes one or more dedicated process controllers 12 each connected to one or more field devices 14 and 15 via input/output (I/O) modules 16 which may be, for example, Fieldbus interfaces. The controllers 12 are also coupled to one or more host or operator workstations 18 via a data highway 20 which may be, for example, an Ethernet link. While the controllers 12, I/O modules 16 and field devices 14 and 15 are located down within and distributed throughout the harsh plant environment, the operator workstations 18 are usually located in control rooms or other less harsh environments easily assessable by controller personnel. Each of the controllers 12 stores and executes a controller application 23 that implements a control

strategy using a number of different, independently executed, control modules 24. The control modules 24 may each be made up of what are commonly referred to as function blocks wherein each function block is a part or a subroutine of an overall control routine and operates in conjunction with other function blocks (via communications called links) to implement process control loops within the process control system 10. Function blocks typically perform one of an input function, such as that associated with a transmitter, a sensor or other process parameter measurement device, a control function, such as that associated with a control routine that performs PID, fuzzy logic, etc. control, or an output function which controls the operation of some device, such as a valve, to perform some physical function within the process control system 10. See Application Specification, p. 6, line 26 – p. 7, line 22.

As described in Fig. 2, a computer 40 stores a configuration application 25, a viewing application 26 and, if desired, one or both of a simulation application 36 and a database configuration application 32 in a memory 44, and executes these applications as needed on a CPU 42. The computer 40 also stores a controller application 23 for execution. As is known in the prior art, the configuration application 25 is used to design and create one or more process control modules 24 to be downloaded to one or more of the controllers 12 and/or field devices 14 and 15 for use in controlling a process. In fact, various ones of the control modules 24 created by the configuration application 25 are specifically designed to be executed in different computing devices within the process plant, such as within different controllers, field devices, etc., but to interact with one another via communication links to thereby implement distributed process control during operation of the process plant in which the control modules 24 are used.

However, to simulate the process plant, the process control modules 24, as designed for use in different computing devices, are downloaded to and are stored in a single computer 40 for testing or simulation purposes. See Application Specification, p. 9, lines 13-25.

As the controller application is now being executed in the computer 40, instead of a dedicated controller 12 having I/O modules attached thereto, the input and output blocks of the control modules 24 must be set to simulate operation of attached devices, such as field devices or input/output modules. See Application Specification, p. 10, lines 6-9. After creating or otherwise receiving the control modules 24 and/or the user interfaces 27, the CPU 42 executes the controller application 23 and the associated control modules 24, executes the viewing application 26 and the associated user interfaces 27, and may execute the database configuration application 32 to simulate the operation of these components and the communicative interactions between these components. Application Specification, p. 9, lines 26-30. The controller application 23 (and the process control modules 24 associated therewith) communicate with the viewing application 26, the simulation application 36, the database configuration application 32 and any other desired applications within the computer 40. See Application Specification, p. 11, lines 4-8. Thus, the claimed simulation system is capable of using a single computer to simulate and test the actual operation of and the communicative interactions between different control modules and user interface applications even though these control modules and user interface applications are designed and created so as to be executed in different process control computing devices.

In addition, independent Claim 19 basically recites a system having a controller application which is designed to operate in a first type of a distributed controller but which can also act outside of the distributed controller as part of an interface between a user interface or display and a second and different type of controller (e.g., one using a different

communication protocol) that may be, for example, operating within an actual process plant. To illustrate the claimed subject matter of Claim 19 in an exemplary manner, and without limiting the scope of the claims other than to the language of the claims themselves, the following summary is provided.

As described in Fig. 3, the controller application 23 stored in the computer 40 may be used to provide an advanced control platform that interfaces with other control platforms within known distributed control systems. The computer 40 and the controller application 23, may be connected via a communication line 48 (which may be a data highway) to a controller 50, which may be a different type of controller or may execute a different controller application, such as one provided by a different process controller manufacturer. The controller 50 may be connected via a communication line 48 to a workstation 52 that runs applications for viewing data generated by the controller 50, changing the process control modules or other software within the controller 50 and other applications, all associated with the controller software executed by the controller 50. The controller application 23 communicates with the controller 50 to obtain desired data and may provide commands to change the operation of the controller 50. In this manner, functionality of the controller, viewing, database configuration or other applications, such as diagnostic and trending applications, within the computer 40 may be used in conjunction with controller applications from other vendors. See Application Specification, p. 13, line 19 – p. 14, line 8.

(vi) Grounds of Rejection to be Reviewed on Appeal

The Applicants appeal from the final rejection of:

(A) Claims 1, 6-8, 10-12 and 17-18 as allegedly unpatentable under 35 U.S.C. § 103(a) over Leibold et al. (U.S. Patent No. 5,818,736) in view of Brown I (U.S. Patent No. 6,377,859);

(B) Claims 19-21 as allegedly unpatentable under 35 U.S.C. § 103(a) over Leibold in view of Brown I and further in view of Brown II (U.S. Patent No. 6,192,281); and

(C) Claims 2, 3, 13 and 14 as allegedly unpatentable under 35 U.S.C. § 103(a) over Leibold in view of Brown I and further in view of what the Examiner has characterized as "Admitted prior art" ("APA"); Claims 4, 5, 15 and 16 as allegedly unpatentable under 35 U.S.C. § 103(a) over Leibold in view of Brown I and further in view of Bowling (PCT WO 97/45778); and Claim 9 as allegedly unpatentable under 35 U.S.C. § 103(a) over Leibold, in view of Brown I and APA and further in view of Santoline et al. (PCT WO 97/38362). For brevity, Applicants are not providing separate arguments with respect to the rejections of the purely dependent claims.

(vii) Argument

The Examiner maintains the rejections of claims 1-21 as obvious over Leibold in view of Brown I either alone, or in combination with one or more of what the Examiner has characterized as the APA, Bowling, Santoline, and Brown II. The Examiner's rejections should not be upheld for reasons best summarized in a discussion of independent claims 1, 12 and 19.1 In summary, however, the Examiner has failed to provide factual support for the rejections sufficient to establish a *prima facie* case of obviousness, and thus the rejections should be withdrawn.

To establish a *prima facie* case of obviousness, three basic criteria must be met. First, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings. Second, there must be a reasonable expectation of success.

Finally, the prior art reference (or references when combined) must teach or suggest all the claim limitations. The teaching or suggestion to make the claimed combination and the reasonable expectation of success must both be found in the prior art, and not based on applicant's disclosure. *In re Vaeck*, 947 F.2d 488, 20 USPQ2d 1438 (Fed. Cir. 1991). The burden is initially on the examiner, but once established the *prima facie* case of obviousness must be rebutted by the applicant.

To reach a proper determination under 35 U.S.C. § 103(a), the examiner must step backward in time and into the shoes worn by the hypothetical "person of ordinary skill in the art" when the invention was unknown and just before it was made. In view of all factual information, the examiner must then make a determination whether the claimed invention "as a whole" would have been obvious at that time to that person. Knowledge of applicant's disclosure must be put aside in reaching this determination, yet kept in mind in order to determine the "differences," conduct the search and evaluate the "subject matter as a whole" of the invention. The tendency to resort to "hindsight" based upon applicant's disclosure is often difficult to avoid due to the very nature of the examination process. However, impermissible hindsight must be avoided and the legal conclusion must be reached on the basis of the facts gleaned from the prior art. MPEP § 2142.

The Applicants submit that the Examiner has failed to make a *prima facie* case obviousness, but has instead engaged in impermissible hindsight analysis. Additionally, Applicants submit that claims 1, 12 and 19 are distinguishable from and allowable over the cited references. The Applicants therefore respectfully request the Board reverse the final rejection of claims 1-21 as unpatentable over the cited references.

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[1] Independent claims 1 and 12 are rejected as obvious over Leibold in view of Brown I while independent claim

A. Rejection of Claims 1, 6-8, 10-12 and 17-18 as Obvious Over Leibold in View of Brown I

Claims 1, 6-8, 10-12 and 17-18 stand rejected as being unpatentable under 35 U.S.C. § 103(a) over Leibold in view of Brown I. Of these claims, Claims 1 and 12 are independent.

For clarity, Applicants will focus on independent Claims 1 and 12, which are generally directed to a system or a method that simulates, on a single computer, the operation of and communication interactions between various process control components of a distributed process control network in which the various components are designed to be run in different computing or logic devices when actually implemented in a process control environment. More specifically, the system and method of Claims 1 and 12 enable a distributed process control routine that has components that are to be stored in and executed on different devices when actually used in a distributed process control system to be both designed (created) and tested on a single simulation computer. Such a combined design and operational testing system is particularly useful in distributed process control systems (in which control modules are generally located and executed in different process control devices disposed at separate locations in the process plant) because it simplifies testing in an environment in which it is sometimes difficult to correctly create the appropriate process control modules without taking into account the communication interconnections between the different devices in which those control modules are executed. Claims 1 and 12 therefore recite the novel and non-obvious combination of creating (or editing) and then simulating, on a single computer device, a set of process control modules which are designed to be implemented in different devices when used for their intended purpose as part of a distributed process control system.

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19 is rejected as obvious over Leibold in view of Brown I and further in view of Brown II.

(1) General inapplicability of Leibold and Brown I to Claims 1 and 12

The concept of Claims 1 and 12 differs substantially from the systems disclosed in the cited art of Leibold and Brown I. In particular, Leibold discloses the concept of using a simulation computer to simulate the operation of logic to be run within a *single* process control computing device in a process control system (e.g., a simulation computer for a single logic point). As a result, the Leibold system basically implements the well-known concept of re-hosting logic to be executed within a single process control computing device onto a separate simulation computer. Brown I, on the other hand, simply discloses an actual distributed process control system (of the type that the claimed system and method is simulating) that includes different software applications and control elements stored in and executed in different computing devices of the process control system during operation of that distributed process control system. Brown I discloses nothing about, and is not concerned with simulating the operation of the distributed process control system disclosed therein. As a result, it is Applicants' contention that no combination of Leibold and Brown I would produce the invention recited by claims 1 and 12. Furthermore, even if Leibold and Brown I could be combined to produce the recited combination, neither Leibold nor Brown I provides any motivation or suggestion for doing so.

In particular, while Leibold discloses a simulation device for a distributed process control system, it is clear that the Leibold simulation computer only simulates the logic located in or associated with a single computing device, i.e., the process controller 105 of Fig. 1. See, for example, Leibold, Col. 5, ll. 50-53 and 63-67; Col. 6, ll. 42-56, which clearly state that, while multiple logic blocks may be simulated, each of the simulated logic blocks is disposed within or is associated with the same "logic point" i.e., logic device. Moreover, the Leibold system goes so far as to require a database within the simulation computer that stores

simulated senor inputs, thereby clearly indicating that this system does not simulate communications between different computing devices. See, Leibold, Col. 2, ll. 53-58. It is therefore clear that Leibold does not disclose or suggest a simulation system that simulates the interaction of two control modules associated with different control devices. The Examiner essentially concedes this point. See, Final Office Action mailed Sept. 22, 2005, pg. 4, ll. 6-8.

Moreover, if Leibold teaches anything, it teaches that simulation of a process control network must be accomplished on a logic-point-by-logic-point basis. Thus, even if it were possible to modify the Leibold process control system to be a distributed system having control modules executed in different devices, the basic teaching of Leibold would require multiple simulation computers, that is, one simulation computer for each logic point, to simulate this system. This teaching is contrary to Claims 1 and 12 which recite simulating, on a single computer, process control modules which are designed to be implemented in different devices (i.e., different logic points) when used for their intended purpose as part of a distributed process control system.

While Brown I discloses a distributed process control system that includes control modules disposed in various and different devices and in which the control modules communicate with one another during operation of the process control system, Brown I provides no disclosure what-so-ever pertaining to any manner of simulating such a process control system. In fact, as discussed in the "Description of the Related Art" section of the current application, the prior art simulation methods for distributed process control systems, such as that of Brown I, required the use of multiple computer and hardware devices to assure that all of the communications between various devices within the process plant were being correctly simulated. See, Application Specification, pg. 4, ll. 1-20.

The fact that Brown I discloses that it is desirable to actually ***implement*** a distributed process control system having multiple control modules disposed in various devices does not amount to a suggestion or a motivation to ***simulate*** the multiple control modules in any manner, much less to do so on a single simulation computer, as is recited by claims 1 and 12. In fact, the opposite is true. That is, one skilled in the art, when trying to simulate the distributed process control system of Brown I would be motivated to use multiple simulation devices to mimic the set up of the Brown I process control network and thereby to be able to simulate not only the operation of the various control modules in different devices, but also the inter-device communications between these different control modules.

(2) Specific lack of teachings or suggestions in Leibold

In addition to the general failure of Leibold or Brown I to teach or suggest every element of Claims 1 and 12, the cited portions of Leibold and Brown I relied upon by the Examiner fail to teach or suggest the particular elements of Claims 1 and 12 to which the cited portions of Leibold and Brown I are applied. For clarity, Leibold is discussed below in association with Claim 1; however, the discussion below is equally applicable to Claim 12.

The Final Office Action of September 22, 2005, ("Final OA"), in paragraph 4.1 on page 3 indicates the various portions of Leibold relied on by the Examiner with respect to the recitation in Claim 1 of "a configuration application stored in the memory of the computer which, when executed on the user workstation or the computer, creates one or more control modules for execution by the distributed controller and a further module for execution by a device separated from the distributed controller, wherein at least one of the control modules is created to communicate with the further module within the device separated from the distributed controller to perform a control activity." The cited portions of Leibold begin with a discussion involving iteratively modifying control rules based on a comparison between a

simulated output and an expected output to remove undesirable interactions. Leibold, col. 3, lines 47-59. The next cited portion refers to defining a rule base of control rules and constituting a logic block pattern, and beginning a simulation process. Fig. 2, elements 220 and 225. A discussion of element 220 of Figure 2 indicates that a user defines a rule base containing control rules and constituting a logic block pattern. Leibold, col. 8, lines 53-60. Other portions of Leibold cited by the Examiner describe typical computer components (Leibold, col. 11, lines 38-42), further details of the iterative process of modifying the control rules involving determining whether the difference between the simulated and expected output is acceptable (Leibold, col. 9, lines 53-62), and that the tested logic block pattern may be used in the actual process control system to decrease detrimental interactions in the design of a process control system (Leibold, col. 10, lines 7-13 and 17-20). The closest that these cited portions of Leibold come to describing the elements of Claim 1 is a note that the logic block pattern may represent devices comprising an actual logic block that could be configured in a similar manner in the actual controller, which indicates nothing more than the scope of the logic block patterns that can be defined by the user (i.e., that the logic block pattern can be configured in a way that is compatible with the way in which an actual function block in an actual controller would be configured). Leibold, col. 8, lines 57-60. At no time does any of the cited portions of Leibold teach or suggest in any way creating anything, much less creating "one or more control modules for execution by the distributed controller and a further module for execution by a device separated from the distributed controller." Moreover, the cited portions of Leibold fail to teach or suggest that a control module is created "to communicate with the further module within the device separated from the distributed controller to perform a control activity."

Continuing on, at page 4 of the Final OA, the Examiner argues that "at least one of the control modules is created to communicate with a user interface module to perform a control activity" is disclosed by Leibold at col. 4, lines 5-10. However, this portion of Leibold discusses that *the testing system* includes a visual display for displaying the logic block pattern as a collection of associated graphical block elements and "that those skilled in the art familiar with GUIs and their use in control environments." Leibold, col. 4, lines 5-10. The Examiner's reliance on this portion of Leibold is misplaced as it would seem to require that the logic block pattern being displayed is *itself* responsible for supporting communication between itself and the display. Applicants respectfully submit that the mere existence of a visual display in Leibold does not teach or suggest the creation of such a self-referential construct. Further, the Examiner appears to also argue that even though the logic block pattern is being used as part of a *testing system,* it is also being used to perform a *control activity*, even though Leibold itself indicates that the testing is performed *prior to the logic block being deployed to perform control activities in the real process control system*. See Leibold, supra. Applicants respectfully submit that the mere existence of a visual display system displaying a logic block pattern does not support the Examiner's stated conclusion based on the discussion in Leibold and/or the knowledge available to one in the art.

Next, the Examiner cites to Leibold's discussions of simulating a signal flow through a logic block pattern using a rule base with control rules and an arbitrary time base (Leibold, col. 2, lines 49-67), some advantages of using simulated input, output and system response data to test a system detached from the real time process control system (Leibold, col. 3, lines 2-8), and that the simulation related to the logic block pattern is performed separately from the real time process control system (Leibold, col. 9, lines 19-30). Applicants respectfully submit that the Examiner's reliance on these passages is again misplaced. While Leibold

discusses simulation, these discussions do not teach or suggest "a configuration application stored in the memory of the computer which, when executed on the user workstation or the computer, creates one or more control modules for execution by the distributed controller and a further module for execution by a device separated from the distributed controller, wherein at least one of the control modules is created to communicate with the further module within the device separated from the distributed controller to perform a control activity" because these passages of Leibold fail to discuss creation of anything and certainly do not teach or suggest creation of both "one or more control modules for execution by the distributed controller" and "a further module for execution by a device separated from the distributed controller." In addition, the mere existence of simulation does not teach or suggest these elements of Claim 1 or their particular capability to "communicate with the further module within the device separated from the distributed controller to perform a control activity." Applicants respectfully submit that these cited portions of Leibold again fail to support the Examiner's conclusions.

(3) <u>Lack of motivation to combine Leibold and Brown I</u>

Moreover, the Examiner has simply failed to point to any actual motivation in either of Leibold or Brown I to make the claimed combination. As indicated above, the Examiner admits that Leibold does not suggest simulating a process control system having different control modules disposed in different computing or logic devices. Moreover, the Examiner's recitation of a "motivation" in Brown I (see, Final Office Action mailed Sept. 22, 2005, pg. 4, ln. 19 to pg. 5, ln. 2) has nothing to do with advantages obtained by a ***simulation*** system. Instead, each of the "advantages" pointed to by the Examiner in this section of the Final Office Action are advantages obtained by providing an actual distributed process control system with multiple control modules located in different devices. None of these advantages

is obtained or realized by a simulation system of any kind, much less by a simulation system that simulates multiple control modules designed to be implemented on different devices on a single simulation computer. The Examiner simply provides no explanation of how using a single simulation computer to execute control modules to be run on different process control devices enables "devices made by different manufacturers to interoperate, the process control to be decentralized and the distributed control systems to be simplified," nor can he as a simulation system has nothing to do with obtaining these advantages.[2] Moreover, there is no reason to modify the simulation blocks of the Leibold simulation system because the actual Leibold process control system (which is being simulated) does not support such modules.

Basically, the Examiner fails to explain how Brown I, which is not at all concerned with a simulation system, can possibly suggest anything with respect to implementing a simulation system. Rather, the knowledge relied upon by the Examiner as the basis for the obviousness rejection has been gleaned only from Applicant's disclosure, as neither Leibold nor Brown I discloses any manner of simulating a distributed process control system having control modules executed in different devices, much less provides any disclosure of or reason for implementing such a simulation system on a single computer. The Examiner's analysis therefore amounts to impermissible hindsight analysis. See, *In re McLaughlin* 443 F.2d 1392, 1395, 170 USPQ 209, 212 (CCPA 1971).

The Examiner has thus failed to establish a *prima facie* case of obviousness with respect to claims 1 and 12 as the Examiner has failed to show how the systems of Leibold and Brown I could be combined to produce a simulation system for distributed process control

[2] The Examiner's reference to the portion of Brown I dealing with the advantages of a truly distributed process control system is simply a red herring and does not provide the motivation or teaching suggested by the Examiner. While, at best, this disclosure may amount to a suggestion to create an actual process control network having process control modules implemented in different devices, this statement provides no recognizable reason or motivation to combine control modules used in these different devices into a single computer of any kind, much less into a single simulation computer.

network having control modules executed in different devices, or any motivation for changing the Leibold system to produce such a simulation system on a single computer.

(4) Dependent claims

Dependent Claims 6-8 and 10-11 depend from independent Claim 1 and dependent Claims 17-18 depend from independent Claim 12. Claims 1 and 12 have been shown above to be allowable. Therefore, dependent Claims 6-8, 10-11 and 17-18 are patentable as depending from an allowable base claim and as defining further distinctions over the cited references.

B. Rejection of Claims 19-21 as Obvious Over Leibold in View of Brown I and Brown II

Claims 19-21 stand rejected as unpatentable under 35 U.S.C. § 103(a) over Leibold in view of Brown I and further in view of Brown II. For clarity, Applicants will focus on independent Claim 19.

Claim 19 basically recites a system having a controller application which is designed to operate in a first type of a distributed controller but which can also act outside of the distributed controller as part of an interface between a user interface or display and a second and different type of controller (e.g., one using a different communication protocol) that may be, for example, operating within an actual process plant.

The Examiner admits that Leibold (and presumably Brown I) does not disclose a system in which one controller application communicates with another controller application, wherein these controller applications use different protocols. See, Final Office Action mailed Sept. 22, 2005, pg. 16, ll. 4-6. The Examiner instead, cites Brown II for this feature. However, contrary to the Examiner's assertion, Brown II does not disclose a system having

multiple process controller applications that use different communication or computer protocols and that communicate with one another.

The portions of Brown II cited by the Examiner simply do not support the Examiner's contention. In particular, the portions of Brown II cited by the Examiner merely indicate that (1) a number of different open communication protocols (such as the HART, PROFIBUS, FOUNDATION™ Fieldbus, etc. protocols) exist and (2) that the system described in the Brown II patent is not limited to the use of any particular one of these protocols. Thus, while Brown II discloses a system that uses an open protocol to provide communications between different devices therein, the Brown II system does not disclose that two of the process controller applications therein can or should use different ones of these possible communication protocols. Instead, it is clear that, in each instance where controller applications are communicating with one another in the Brown II system, these controller applications use the same communication protocol. Indeed, Brown II specifically notes that a field device conforming to one of the protocols can be used with a controller that "supports the protocol." Brown II, col. 1, lines 61-65. To the contrary, Claim 19 recites, in part, "a controller application stored in the memory of the computer, wherein the controller application, when executed on the distributed controller, implements a control module during operation of the distributed process control system and wherein the controller application when executed on the computer communicates with a further controller that uses a different communication protocol than the distributed controller of the distributed process control system." Thus, in contrast to Brown II, the system of Claim 19 supports communication between controllers that use *different* protocols.

Moreover, it is noted that the NAFI device of the Brown II system is not a controller application and does not appear to provide communications between two different controller

applications. Thus, any disclosure pertaining to the NAFI device is irrelevant to the Examiner's combination.

For these reasons, the Examiner's combination does not produce a system having multiple controller applications that communicate with one another and that use different communication protocols. Therefore no combination of Leibold and Brown I and Brown II can produce the invention of Claim 19. Moreover, none of this art provides any suggestion or motivation to produce a system having this combination of features. As a result, the Examiner has failed to establish a *prima facie* case of obviousness for claim 19.

Dependent Claims 20-21 depend from independent Claim 19, shown above to be allowable. Therefore, dependent Claims 20-21 are patentable as depending from an allowable base claim and as defining further distinctions over the cited references.

C. Rejection of Dependent Claims

Claims 2, 3, 13 and 14 stand rejected as allegedly unpatentable under 35 U.S.C. § 103(a) over Leibold in view of Brown I and in further view of what the Examiner has characterized as APA. Claims 4, 5, 15 and 16 stand rejected as allegedly unpatentable under 35 U.S.C. § 103(a) over Leibold in view of Brown I and further in view of Bowling. Claim 9 stands rejected as allegedly unpatentable under 35 U.S.C. § 103(a) over Leibold in view of Brown I and APA and further in view of Santoline. Dependent Claims 2-5 and 9 depend from independent Claim 1 and dependent Claims 13-16 depend from independent Claim 12. Claims 1 and 12 have been shown above to be allowable. Therefore, dependent Claims 2-5, 9 and 13-16 are patentable as depending from an allowable base claim and as defining further distinctions over the cited references.

(viii) Claims Appendix

An appendix containing a copy of the claims involved in the appeal is attached as Appendix A hereto.

(ix) Evidence Appendix

There is no additional evidence submitted in this appeal.

(x) Related Proceedings Appendix

There are no decisions rendered by a court or the Board in any proceeding identified pursuant to section (ii), above.

(xi) Conclusion

For the reasons provided above, the Applicants respectfully request that the Board reverse the final rejection of Claims 1-21 as unpatentable over Leibold in view of one or more of Brown I, Bowling, Brown II, Santoline and the APA as applied by the Examiner.

Dated: March 27, 2006

Respectfully submitted,

By [signature]

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APPENDIX A – CLAIMS APPENDIX

1. (Previously Presented) An apparatus for use with a distributed process control system having a user workstation remotely located from a distributed controller that controls one or more field devices using control modules, the apparatus comprising:

a computer having a memory and a processing unit;

a configuration application stored in the memory of the computer which, when executed on the user workstation or the computer, creates one or more control modules for execution by the distributed controller and a further module for execution by a device separated from the distributed controller, wherein at least one of the control modules is created to communicate with the further module within the device separated from the distributed controller to perform a control activity; and

a controller application stored in the memory of the computer, which may be executed on the processing unit of the computer, wherein the controller application, when executed on the distributed controller, implements the one of the control modules during operation of the distributed process control system to communicate with the further module to perform the control activity;

wherein the configuration application, when executed on the computer, further creates the one of the control modules for use by the distributed controller within the distributed process control system and wherein the controller application when executed on the computer causes execution of the one of the control modules and the further module within the computer to simulate the operation of the one of the control modules including simulating communicating with the further module to thereby simulate operation of the distributed process control system.

2. (Previously Presented) The apparatus of claim 1, wherein the configuration application, when executed on the computer, creates a user interface for use in displaying information to a user, and further including a viewing application stored in the memory of the computer to be executed on the processing unit of the computer, wherein the viewing application, when executed on the computer, uses the user interface to display information pertaining to the one of the control modules to a user.

3. (Previously Presented) The apparatus of claim 1, further including a configuration database application stored in the memory of the computer to be executed on the processing unit of the computer, wherein the configuration database application, when executed on the computer, communicates with the controller application within the computer to manage a configuration database.

4. (Previously Presented) The apparatus of claim 1, wherein the controller application includes an execution rate parameter specifying the rate of execution of the one of the control modules within the computer.

5. (Previously Presented) The apparatus of claim 4, wherein the execution rate parameter can be set to be greater than or less than a real time execution rate of the one of the control modules when the one of the control modules is executed within the distributed controller of the distributed process control system.

6. (Previously Presented) The apparatus of claim 1, wherein the configuration application, when executed on the user workstation or the computer, creates a further control module for execution within the distributed controller during operation of the distributed process control system.

7. (Previously Presented) The apparatus of claim 1, wherein the configuration application, when executed, creates the further module to be executed within one of the field devices communicatively connected to the distributed controller during the operation of the distributed process control system.

8. (Previously Presented) The apparatus of claim 1, further including a simulation application stored in the memory of the computer which, when executed on the processing unit of the computer communicates with the controller application within the computer to simulate the operation of the distributed process control system.

9. (Previously Presented) The apparatus of claim 1, wherein the controller application, when executed within the distributed controller, communicates with the field devices through an input/output device.

10. (Previously Presented) The apparatus of claim 1, wherein the controller application, when executed on the computer, communicates with a further controller that is of a different type than the distributed controller of the distributed process control system.

11. (Previously Presented) The apparatus of claim 10, further including a viewing application stored in the memory of the computer which, when executed on the processing unit of the computer communicates with the controller application and uses a user interface to display information sent from the further controller.

12. (Previously Presented) A method of simulating a distributed process control system having a user workstation remotely located from a distributed controller which controls one or more field devices using control modules, wherein the user workstation stores and uses a configuration application used to create the control modules for execution by the distributed controller to communicate with at least one further module within a device separated from the distributed controller and wherein the distributed controller stores and executes a controller application to control a process using the control modules during operation of the distributed process control system, the method comprising the steps of:

storing the configuration application in a first computer having a memory and a processing unit;

storing the controller application in the memory of the first computer;

executing the configuration application on the first computer to create a first control module to be used by the distributed controller within the distributed process control system to communicate with the at least one further module and to create the at least one further module to be used by a device apart from the distributed controller within the distributed process control system; and

executing the controller application on the first computer to cause execution of the first control module and the at least one further module within the first computer to thereby simulate operation of the distributed process control system.

13. (Previously Presented) The method of claim 12, further including executing the configuration application to create a user interface for use in displaying information to a user, storing a viewing application in the memory of the first computer and executing the viewing application on the first computer to display information pertaining to the first control module to a user on a display associated with the first computer using the user interface.

14. (Previously Presented) The method of claim 12, further including storing a configuration database application in the memory of the first computer and executing the configuration database application on the first computer so that the configuration database application communicates with the controller application within the first computer to manage a configuration database.

15. (Previously Presented) The method of claim 12, wherein executing the controller application includes specifying an execution rate for the first control module when executing the first control module within the first computer.

16. (Previously Presented) The method of claim 15, wherein executing the controller application includes executing the first control module at an execution rate that is greater than or less than a real time execution rate of the first control module when the first control module is executed within the distributed controller of the distributed process control system.

17. (Previously Presented) The method of claim 12, wherein executing the configuration application includes creating the at least one further module to be executed within one of the field devices communicatively connected to the distributed controller during the operation of the distributed process control system.

18. (Previously Presented) The method of claim 12, further including storing a simulation application in the memory of the first computer and executing the simulation application on the first computer to communicate with the controller application within the first computer to simulate the operation of the distributed process control system.

19. (Previously Presented) An apparatus for use in conjunction with a distributed process control system having a user workstation remotely located from a distributed controller that controls one or more field devices using control modules, the apparatus comprising:

a computer having a memory and a processing unit;

a display connected to the computer;

a controller application stored in the memory of the computer, wherein the controller application, when executed on the distributed controller, implements a control module during operation of the distributed process control system and wherein the controller application when executed on the computer communicates with a further controller that uses a different communication protocol than the distributed controller of the distributed process control system; and

a viewing application stored in the memory of the computer which, when executed on the processing unit of the computer communicates with the controller application and uses the display to display information sent from the further controller.

20. (Original) The apparatus of claim 19, further including an interface connected between the further controller and the controller application.

21. (Original) The apparatus of claim 20, wherein the interface is an OPC interface.